

What is claimed is:

1. An apparatus for forming a capacitor stack for a flat capacitor, the apparatus comprising:
  - 5 a fixture for holding a plurality of capacitor layers defining a capacitor stack as each of the plurality of capacitor layers is placed onto the capacitor stack; and  
means for continually applying a compression force on the capacitor stack until each of the plurality of capacitor layers have been placed onto the capacitor stack.
- 10 2. The apparatus of claim 1, wherein the fixture includes a base pad for holding the capacitor stack, wherein the base pad is continually urged upwards.
3. The apparatus of claim 1, wherein means for continually applying a compression force includes a base pad for continually urging the capacitor stack  
15 upward and an upper member for contacting a top surface of the capacitor stack.
4. The apparatus of claim 1, further including an alignment system for aligning each of the plurality of capacitor layers as each capacitor layer is place onto the capacitor stack.  
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5. The apparatus of claim 4, wherein the alignment system includes a vision alignment system.
6. An apparatus for forming a capacitor stack, the apparatus comprising:
  - 25 a fixture for holding a stack of individual capacitor layers, the fixture having a base pad and a force member to force the base pad upward, the fixture having an upper member to hold down the stack as the stack is forced upward by the base pad;  
a placement member for placing each of a plurality of capacitor layers into the fixture; and

an alignment system for aligning each of the plurality of capacitor layers as the placement member places each layer into the fixture;

wherein, the upper member is adapted to move while the placement member holds down each capacitor layer as each capacitor layer is placed onto the stack such  
5 that the stack is continually in compression.

7. The apparatus of claim 6, wherein the placement member includes a controlled robotic placement arm.

10 8. The apparatus of claim 6, wherein the placement member includes a manually manipulated tool.

9. The apparatus of claim 6, wherein the alignment system includes a vision alignment system.

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10. The apparatus of claim 6, wherein the force member includes a spring.

11. An apparatus comprising:

a base pad for holding a stack of individual capacitor layers;

20 a movable upper member located above the base pad, such that the stack is located between the base pad and the upper member; and

a placement member for placing each of a plurality of capacitor layers onto the stack;

25 wherein, the upper member is adapted to move while the placement member holds down each capacitor layer as each capacitor layer is placed onto the stack such that the stack is continually held down by either the upper member or the placement member until each of the plurality of capacitor layers is placed.

12. The apparatus of claim 11, including a force member to force the base pad  
30 upwards towards the upper member.

13. The apparatus of claim 11, wherein the force member includes a spring.

14. The apparatus of claim 11, wherein the upper member includes a pair of upper members.

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15. The apparatus of claim 14, wherein the pair of upper members are positioned to contact a top surface of the capacitor stack near an outer edge of the capacitor stack.

16. The apparatus of claim 11, further including an alignment system for aligning  
10 each of the plurality of capacitor layers as the placement member places each layer onto the stack.

17. The apparatus of claim 16, wherein the alignment system includes a vision alignment system.

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18. The apparatus of claim 11, wherein the placement member includes a controlled robotic placement arm.

19. The apparatus of claim 11, wherein the placement member includes a manually  
20 manipulated tool.

20. The apparatus of claim 11, wherein the apparatus is configured such that there is a continually applied compression force on the capacitor stack until each of the plurality of capacitor layers have been placed onto the capacitor stack.